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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/573,068

03/23/2006

Ivan Salgo

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05/06/2009

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

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Briarcliff Manor, NY 10510-8001

EXAMINER

MEHTA, PARIKHA SOLANKI

ART UNIT

PAPER NUMBER

3737

MAIL DATE

DELIVERY MODE

05/06/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/573,068 | Applicant(s) SALGO, IVAN | |
| | Examiner PARIKHA S. MEHTA | Art Unit 3737 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the entire cover page of Applicant's PCT application does not constitute a proper abstract. Correction is required. See MPEP § 608.01(b).

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Real-time volumetric biplane ultrasound imaging and quantification.

Drawings

3. The drawings are objected to because two sets of drawings were filed on 23 March 2006, neither of which was labeled "Replacement sheets"; as such, it is unclear which set of drawings is to be considered. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-8, 11, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chenal et al (US PG Pubs. No. 2002/0072671), hereinafter Chenal ('671), of record, in view of Detmer (US Patent No. 6,443,896), hereinafter Detmer ('896).

Regarding claims 1, 3 and 6, Chenal ('671) teaches method of ultrasonically measuring the heart, including steps for repetitively acquiring ultrasonic images, using an automated processor to define corresponding object borders around the wall of a cardiac chamber in the ultrasonic images during the heart cycle, producing a plurality of quantified measures of the volume of the heart during the heart cycle from the borders, and displaying the plurality of quantified measures (Abstract, ¶ 0004, 0035). Chenal ('671) does not expressly teach acquiring the images in two intersecting image planes at substantially the same time.

In the same field of endeavor, Detmer ('896) teaches a method of ultrasonic imaging including steps for substantially simultaneously acquiring ultrasound images in two perpendicular planes, as well as steps for displaying the images in real time (col. 1 lines 47-65). Detmer ('896) teaches that biplane imaging is more efficient than traditional 3D imaging methods (col. 1 lines 31-50). It would have been obvious to one of ordinary skill in the art at the time of invention to have modified Chenal ('671) to acquire the ultrasound images in a biplane manner and display them in real time as taught by Detmer ('896), in order to increase the imaging efficiency.

Regarding claim 2, Chenal ('671) teaches producing a graphical model of the heart using the defined borders, wherein producing quantified measures comprises producing measures using the graphical model (¶ 0023-0032).

Regarding claims 4 and 5, Chenal ('671) teaches producing a graphical display of changes in the heart as a function of time (¶ 0038-0041).

Regarding claims 7 and 16, Chenal ('671) teaches producing a display with a visually highlighted defined object border in each image, a real time graphical model using the object borders, and a quantified measure using the defined object border (¶ 0045, 0050).

Regarding claim 8, Chenal ('671) teaches use of the graphical model to produce a volumetric measure by the rule of disks (¶ 0040).

Regarding claims 11 and 17, Chenal ('671) and Detmer ('896) teach all features of the invention as previously discussed for claims 1 and 2.

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6. Claims 9, 10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chenal ('671) and Detmer ('896) as applied to claims 2 and 11 above, and further in view of Mumm et al (EP 961135), hereinafter Mumm ('135).

Regarding claims 9, 12 and 14, Chenal ('671) and Detmer ('896) do not expressly teach using the automatically generated borders to produce a graphical model by creating a wireframe model. In the same field of endeavor, Mumm ('135) teaches steps for generating a 3D wireframe model of the heart using predefined contours (i.e. "curves") to fit a surface to the model, and further teaches that such wireframe modeling increases the efficiency of the modeling process (Abstract). It would have been obvious to one of ordinary skill in the art at the time of invention to have modified Chenal ('671) and Detmer ('896) to generate the graphical model using the wireframe modeling steps of Mumm ('135), in order to improve the efficiency of the modeling process.

Regarding claims 10 and 13, neither Chenal ('671), Detmer ('896) nor Mumm ('135) expressly teach the contours to be ellipses. However, it is well known in the art that the cardiac chambers are generally elliptical in shape. As such, it would have been obvious to one of ordinary skill in the art at the time of invention to have performed the method of Chenal ('671), Detmer ('896) and Mumm ('135) using ellipses for the contours, in order to generate an accurate model of the heart.

Regarding claim 15, Chenal ('671) teaches use of the graphical model to produce a volumetric measure by the rule of disks (§ 0040).

Response to Arguments

7. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit

3737

/Parikha S Mehta/

Examiner, Art Unit 3737